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UNITED STATES DEPARTMENT OF AGRICULTURE
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COMMUNITY PRODUCTION AND DISTRIBUTION OF COTTON PLANTING SEED IN A ONE-VARIETY COTTON COMMUNITY

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DEVELOPMENT OF THE COTTON INDUSTRY IN THE SAN JOAQUIN VALLEY

Growing a single variety of cotton has been recognized for many years as opening the way to improving the system of production through a wider utilization of superior varieties. The plan has been adopted in many communities with various degrees of success, depending on the local interest and the leadership in making necessary adjustments in the production system and in marketing the improved product.

One essential feature of community cotton-production development is maintaining large stocks of pure seed so that all the farmers of the district regularly obtain seed of the same quality as a basis for a stabilized production of more uniform fiber in commercial quantities. The organized communities have encountered the problem of developing suitable methods of handling and distributing the supplies of seed at a minimum cost to the individual grower. The largest undertaking of this kind, by an agency set up by a cotton-growing community to handle the seed stocks of an extensive single-variety district, is in the San Joaquin Valley of California. The purpose of this circular is to describe how the system of handling the stocks of cotton planting seed was worked out and applied.

The San Joaquin Valley lies between the Sierra Nevadas on the east and the Coast Range on the west. It is the largest interior valley of California, embracing parts of Kern, Tulare, Kings, Fresno, Madera, Merced, Stanislaus, and San Joaquin Counties. Several important rivers enter the valley from the Sierra Nevadas, but a relatively small number of the valley farms obtain water for irriga-

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tion from these streams by gravity. Where gravity water is not available, the cost of irrigation water is an important item in crop production, since each farm must have one or more pumping units.

The soils of the valley are composed mainly of old valley-filling and recent alluvial material, which are, in general, well adapted to the growing of cotton. The summer temperatures are rather high, with low humidity, while the nights are generally cooler than in other southwestern valleys. Ordinarily very little rainfall occurs from early May until late September. The mean annual rainfall ranges from 5 to 12 inches, the southern end of the valley having the lighter precipitation. The agriculture is diversified, including considerable acreage of grapes, deciduous fruits, field and truck crops, and a small acreage of citrus fruits.

The cotton industry in the San Joaquin Valley is of recent origin. Early efforts at production were made in 1873–74, but on account of high production costs, inexperienced labor, and poor market facilities the experiment was abandoned. The present industry had its beginning in 1917, when there was a good demand for cotton. The possible utilization of California lands for extended cotton production along lines of community organization have been presented by O. F. Cook[1] of the Bureau of Plant Industry. Pima (Egyptian) and upland cotton were about equally divided in acreage until 1920, about 10,000 acres of each being produced annually. The decline in cotton prices in the fall of 1920 reduced the valley plantings to 3,500 acres in 1921 and to 2,500 acres in 1922. In 1923 it was increased to 9,000 acres and continued to increase until 1929, when 251,500 acres were harvested. The acreage of cotton harvested and the average yield of fiber per acre, by counties, for 1923–30, are given in table 1.

The planting of Pima cotton in the San Joaquin Valley was discontinued in 1920, leaving the entire acreage to upland cotton. Acala was considered better adapted to local conditions than other upland varieties that had been tried or tested, and a program of developing local seed supplies of this variety was inaugurated. A stock of Acala seed shipped into Kern County from northern Texas in 1919 formed the basis of the seed supply for several years until replaced by a specially selected stock from the Coachella Valley of California.[2]

TABLE 1.—*Acreage of cotton harvested and average yield of fiber per acre for 1923 to 1930, in the counties indicated*

County	1923		1924		1925		1926	
	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber
		Pounds		*Pounds*		*Pounds*		*Pounds*
Stanislaus and San Joaquin	---------	---------	---------	---------	1,200	238	3,000	149
Merced	---------	---------	[a] 400	305	5,400	160	9,300	278
Madera	---------	---------	1,400	325	11,000	245	9,800	309
Fresno	[b] 1,500	458	7,600	364	17,000	369	20,700	346
Kings	1,000	369	6,500	399	12,000	421	11,200	509
Tulare	700	490	5,900	437	17,200	439	22,300	510
Kern	5,800	516	16,000	532	32,800	463	33,000	510
Total, and average for San Joaquin Valley	9,000	488	37,800	450	96,600	393	109,300	431

[a] Merced County, and north. [b] Fresno County, and north.

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[1] COOK, O. F. EXTENSION OF COTTON PRODUCTION IN CALIFORNIA. U.S. Dept. Agr. Dept. Bul. 533, 16 p. 1917.

[2] MCKEEVER, H. G. COMMUNITY PRODUCTION OF ACALA COTTON IN THE COACHELLA VALLEY OF CALIFORNIA. U.S. Dept. Agr. Dept. Bul. 1467, 48 p., illus. 1927.

TABLE 1.—*Acreage of cotton harvested and average yield of fiber per acre for 1923 to 1930, in the counties indicated*—Continued

County	1927		1928		1929		1930	
	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber	Acreage	Average acre yield of fiber
		Pounds		*Pounds*		*Pounds*		*Pounds*
Stanislaus and San Joaquin	1,000	174	1,600	280	4,100	229	2,900	217
Merced	5,000	236	17,200	248	23,000	318	21,600	354
Madera	7,600	321	15,300	324	26,000	378	26,800	450
Fresno	9,500	437	27,100	441	57,000	385	47,000	479
Kings	9,000	382	15,100	507	22,000	491	25,200	532
Tulare	18,900	437	34,600	496	67,000	445	63,400	484
Kern	28,800	465	41,000	501	52,400	572	51,300	602
Total, and average for San Joaquin Valley	79,800	414	151,900	441	251,500	440	238,200	495

ONE-VARIETY COTTON DISTRICTS

On May 22, 1925, a law (Calif. Stat., p. 491)[3] providing for one-variety cotton districts in California was approved. All cotton-growing counties in the San Joaquin Valley are included in this enactment.

The variety to be grown in each district was designated in the act, since there was a question whether such legislative authority could be delegated, as in establishing a system of local option. Prior to this legislation, one-variety ordinances had been passed by the boards of supervisors in Riverside and Kern Counties, but the constitutionality of these measures had been questioned.

Acala was the variety adopted for production, and since provisions were made for using this variety exclusively in the valley it became necessary to develop an organization for distributing planting seed at a fair price. Opportunity for speculation and profiteering would be great if the seed were not handled through a nonprofit agency.

ORGANIZATION OF SEED-DISTRIBUTING AGENCY

From the beginning of the cotton industry in the San Joaquin Valley, Kern County took a decided lead in production. The United States Cotton Field Station was established at Shafter, in 1921, and began to develop pure strains of Acala seed. On May 30, 1925, the farm bureau of Kern County organized the Farm Bureau Planting Cotton Seed Distributors, an unincorporated, nonprofit, service organization, to increase and distribute for planting purposes the cottonseed developed at the Shafter station. The bylaws of this organization specify that the seed shall be grown and distributed at a cost as low as practicable, for the benefit of the cotton grower.

The organization is managed by a board of seven directors. Five directors are elected for terms of 2 years each, two are elected on the odd-number years, and three are elected on the even-number years, by the board of directors of the Kern County Farm Bureau in regular session in May of each year. Should this board of directors neglect to choose the required number of new directors, then the hold-over directors, whose terms have not expired, elect them. At the first meeting of the directors, following their election, one additional director is chosen each year by the five so elected, to serve a term of 2 years.

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[3] A full copy of this act may be found in the following publications: COOK, O. F. COTTON IMPROVEMENT LAWS IN CALIFORNIA. Jour. Heredity 16: 335–338. 1925. MCKEEVER, H. G. Op. cit.

The board of directors has power to enter into agreement with growers for the production of improved seed for planting purposes. The board may make rules for the production of various grades of seed and may disqualify any seed which in its judgment does not meet such standard.

The expenses of the organization are met by a fee, known as the handling charge, collected from the growers of the seed on the basis of the planting seed sold through the organization. The amount of the handling charge is determined annually by the board of directors.

If more money is collected than is needed for expenses, a surplus fund may be built up. After the surplus has become ample for a safe conduct of business, money collected annually as handling charges, in excess of annual operating expense, is prorated to members who paid the handling charge.

In case of the dissolution of the organization all money in the surplus fund would be prorated to the growers who paid handling charges into the organization during the 3 years prior to dissolution.

INCREASE OF SEED STOCK

The seed distributed by the Farm Bureau Planting Cotton Seed Distributors for general planting purposes is increased from a nucleus furnished each year from the United States Cotton Field Station at Shafter, conducted by the United States Department of Agriculture in cooperation with the board of supervisors of Kern County. The stock furnished from the station is locally known as "parent seed"[4] by the distributors, and about 150 acres are planted for increase with 8 or 10 approved growers.

Before the parent seed is distributed to the approved growers, it is adequately tested over a wide range of growing conditions in order to prove its general adaptability. The methods of selection that are being employed to maintain the uniformity of the seed stocks are described at length in a recent publication.[5] After the selection of plants and testing of progenies has been completed, the select stocks of seed are planted at the field station, where they are carefully rogued during the summer. The station maintains a cotton gin for its exclusive use in safeguarding the purity of this seed.

SELECTION OF GROWERS AND FIELDS

The growers and fields are carefully selected to meet the following requirements:

(1) The grower must have proved his ability as a cotton farmer in the community. Cotton farming is not an old industry in the San Joaquin Valley, and many growers have recently entered from the cotton States where growing conditions are unlike those encountered in the valley.

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[4] The terminology established by the local organization in handling the seed stocks may be somewhat confusing to the general reader. The "parent seed" corresponds to what is considered "foundation stock" by the International Crop Improvement Association. The "reproduction seed" or "yellow label" stock corresponds to "registered seed", while the "blue label" or "improved stock" is equivalent to "certified seed."

[5] COOK, O. F. COTTON MPROVEMENT THROUGH TYPE SELECTION, WITH SPECIAL REFERENCE TO THE ACALA VARIETY. U S. Dept. Agr. Tech. Bul. 302, 62 p., illus. 1932.

(2) The field must be isolated, and approximately 1 mile from any inferior strain of cotton. Reproduction seed (or yellow label) can be used to protect parent seed.

(3) The previous cropping must have been rogued seed or some crop other than cotton.

(4) The water supply must be ample.

(5) The soils must be of more than average fertility and leveled for uniform distribution of water.

(6) Noxious weeds must be controlled in the seed fields, since each lot of seed offered for sale in California must have an inspection tag showing the amount and kind of weed seed present. Many weed seeds with smooth surfaces are readily removed from cottonseed with modern cleaning and ginning machinery, but other seeds may not be removed in ginning.

The parent-seed fields are kept under close observation by the organization manager. These fields are also carefully rogued during July, with the cooperation of the farm adviser and the staff of the Shafter field station.

The seed from these increase fields is known as "reproduction seed" and is marked with a yellow tag securely attached to each bag. This reproduction seed is further increased the following year for general distribution by members of the growers' and finance pools. The seed is then known locally as "improved seed" or "blue label" and is the grade generally used for planting.

The members of the growers' pool produce seed for general distribution by the distributing organization. Members of the finance pool produce seed for their clientele only, except that their production may be available to the distributing organization as set forth in paragraphs 4 and 5 of the finance pool agreement to be discussed later.

REGULATIONS GOVERNING GROWERS' POOL

Application blanks are supplied to prospective members of the growers' pool and must be on file with the distributing organization not later than March 1. The location of the field must be given, with a statement as to the previous crop grown, the water supply, and the distance from the proposed field to other cotton fields. Parent-seed fields require 1-mile isolation from cotton other than yellow-tag, or reproduction-seed stocks. Reproduction-seed fields require ½-mile isolation from cotton other than blue-tag or improved-seed stocks. The applicant is requested to state the equity, if any, which other persons will control in his crop of seed, and must agree to keep the field free of noxious weeds and to comply with the organization's rules and regulations, which are made a part of his application. The title to the seed is in the grower's name at all times, the organization acting only as reproducing and distributing agent. All growers who qualify to grow seed in accordance with these rules and regulations are members of the organization for the season for which they have qualified.

The seed must be grown on the type of land described in the application, and all planting seed (as defined by the rules) that is grown in that portion of the field of which the growing conditions have been approved by the organization must be delivered to the organization. It is also agreed that the organization will have the right to refuse the whole or any portion of the grower's planting seed if in the opinion of the former there will be an undetermined demand for seed.

If the supply of seed exceeds a possible demand, seed is accepted from each grower in the ratio of his qualified acreage to the total qualified acreage. It is further agreed by the grower that all seed from his field that is not accepted by the organization for the season's pool shall be so disposed of that it will not be used for planting.

For planting, growing, and harvesting reproduction fields planted with yellow-tag seed for the final stage of production of improved seed, the seed shall be grown on land that was planted to some crop other than cotton the previous year, or that was planted to registered organization seed the previous year, or that has never produced cotton. The field shall have approximately ½-mile isolation from a planting of an inferior strain of cotton.

The picking sacks, wagons, and other containers shall be thoroughly cleaned of all seed cotton and seed. The gins shall be thoroughly cleaned before starting the run. The seed shall be caught on a clean floor directly under the gin stands or run through special pure-seed augers provided for that purpose. All seed must be sacked in new or clean sacks as the cotton is ginned, and all seed must be handled and ginned to the satisfaction of the organization.

The grower assumes all responsibility for frost-damaged seed or any that is unsalable that he may deliver to the organization. Any seed rejected by county or State authorities in transit or at destination shall be disqualified and returned to the grower, who shall bear all expenses in connection with it.

The organization reserves the right to disqualify cottonseed from any field found to be infested with maturing noxious weeds and to classify all seed sold by it, to select areas to be used for the reproduction of this seed, and to reject any seed or areas that do not fulfill the conditions specified in the rules and regulations.

As a protection against frost-damaged seed, the organization reserves the right to set a time limit after which seed will not be received. Seed from cotton producing a staple of less than 1⅛ inches is subject to rejection by the organization.

Seed is to be delivered and stored in any commercial warehouse at the owner's expense, or in any private warehouse approved by the organization or its agent.

The organization assumes no responsibility as to fire or theft of any seed. It advertises and sells all planting seed in the growers' pool as early as possible and for cash only.

REGULATIONS GOVERNING THE FINANCE POOL

Production by cotton growers in the San Joaquin Valley is financed by a few relatively large companies which control the ginning, operate oil mills, and merchandise a large percentage of the cotton. Since these companies finance much of the crop and their growers use large quantities of planting seed, they requested a cooperative arrangement with the seed organization whereby planting seed could be made available to them without the annual outlay of relatively large sums for purchases. To meet this demand the seed-distributing organization arranged to supply these companies with a given amount of seed (yellow tag) for the reproduction fields each season.

The cooperative arrangement with the financing companies provides for a more extensive use of good planting seed throughout the valley than would otherwise obtain, because of the large acreage controlled by these companies who may now furnish good seed to their growers as part of their finance agreement. The finance pool further makes available a large surplus of seed that may be used by the seed-distributing organization should some contingency cause the growers' pool to be inadequate to supply the demand.

The rules governing the selection of seed fields and the handling of seed cotton at harvest and ginning are the same for the finance pool as for the growers' pool, with the following special rules for the finance pool only:

1. That the Farm Bureau Planting Cotton Seed Distributors will supply, at the same price set for all 19— organization seed, ——— pounds of reproduction (yellow tag) seed, this being at the rate of 20 pounds to the acre.

Growers are cautioned to use good judgment when planting the reproduction seed and not to plant extremely early. However, 25 pounds of seed per acre is recommended as a minimum amount to insure a satisfactory stand.

2. That the reproduction seed referred to in paragraph 1 will be planted on lands situated and described as follows:

——— sec. ——— T. ——— R. ——— county of ———
——— sec. ——— T. ——— R. ——— county of ———
——— sec. ——— T. ——— R. ——— county of ———

Some of the financing companies operate throughout the valley. To reduce hauling expenses and insure themselves an ample supply of seed from well-grown fields they often prefer plantings in different counties. On the other hand, where a large acreage of good land is available and suitable isolation is provided, seed can be saved from one area and the problem of harvesting and ginning simplified.

3. That only a sufficient amount of seed will be saved from the above-mentioned fields to supply the clientele of the undersigned. It is also expressly understood that any seed saved from said fields is not to be sold to the trade. The purpose of this arrangement is to supply the undersigned's clientele only. The amount to be saved to be decided upon prior to time of ginning.

At ginning time the financing companies should know their approximate planting requirements for the ensuing year. Their gin managers can assure farmers of a supply of good seed and discourage the saving of gin-run seed.

4. Subject to acceptance by the organization, the undersigned may place any or all of his seed in organization's hands for selling under the same conditions as provided for in the sales agency agreement attached hereto.

Should the organization sell all seed saved in the growers' pool, and have seed available in the finance pool, this could be sold and the financing company supplying it would receive the sale price, less handling charge.

5. The organization is granted the right or option to purchase outright from the undersigned at oil mill prices any of said seed over and above the amount saved for use as provided in paragraph 3, or saved by him for the organization seed pool as per paragraph 4.

Should some contingency cause the growers' pool to seem inadequate to supply the coming season's demand, the organization reserves the right to purchase from the finance pool on terms set forth above. For this purchase the organization would use money from its surplus fund, and any profit derived from the transaction would be used to reduce the handling charge for the year, provided the surplus was already ample.

6. That no seed from the above-described field will be handled, saved, sold, or given to anyone for planting, except as enumerated in paragraphs 3, 4, 5, above, and that the undersigned will handle the balance of crop through gins in such a manner that no one will save any seed from said field.

Since the seed organization is maintained by a handling charge on each pound of seed sold, the above agreement is necessary. Otherwise the organization would not only receive no handling charge, but growers'-pool and finance-pool members would be penalized on account of reduced sales and higher handling charges.

7. That the Cotton Finance Co. ———, will pay to the organization, not later than ——— —, 19—, a handling charge of not to exceed 1 cent per pound on seed so saved by same. The handling charge to be set by the board of directors at same time the price of planting seed is set.

The handling charge is the same for the finance and for the growers' pools. It is collected on seed actually used by the finance company.

Since the price of seed is determined by the oil-mill price plus extra costs of production and handling, the financing companies benefit by this agreement only by absorbing such items as extra ginning charges, trucking, storage, shrinkage, insurance, and interest (table 2), and by saving the pooling differential.

The management of the seed organization approves the location of seed fields and inspects the crop during the growing and harvesting season. The financing companies are under a seed-production contract similar in all major details to that signed by members in the growers' pool.

Blue tags for the finance-pool seed are furnished by the distributing organization. These tags have the following inscription: "Acala cotton seed produced under agreement by ——— cooperating with the Farm Bureau Planting Cotton Seed Distributors", and have a special series of registration numbers.

The method of seed increase from the breeding block to the improved seed or blue-tag seed for general distribution is illustrated graphically in figure 1, showing the progress of the seed each year as discussed in the preceding paragraphs.

FIELD INSPECTION

The management of the distributing organization approves the location of reproduction fields before planting time and inspects the fields at frequent intervals throughout the growing season. Isolation must be checked immediately after planting, and during the growing season weed control and water requirements of the plants must be given regular supervision. Before harvest time the final field inspections are made, and any part of a field containing noxious weeds or any part in which the cotton has actually suffered from lack of water is rejected. The integrity of the members largely safeguards against seed from rejected areas being saved for the organization. The inspectors continue their field examinations until seed fields are harvested. The field-record sheet shown as figure 2 is used in reporting these examinations.

GINNING PLANTING SEED

Seed fields are grown in different parts of the valley and several gins are used. All gins in the valley have metal seed-cotton houses that may be cleaned easily. This enables the growers to store seed cotton for a pure-seed run. Ginners have been taught the importance of carefully handling cotton from seed fields, and they prefer to make

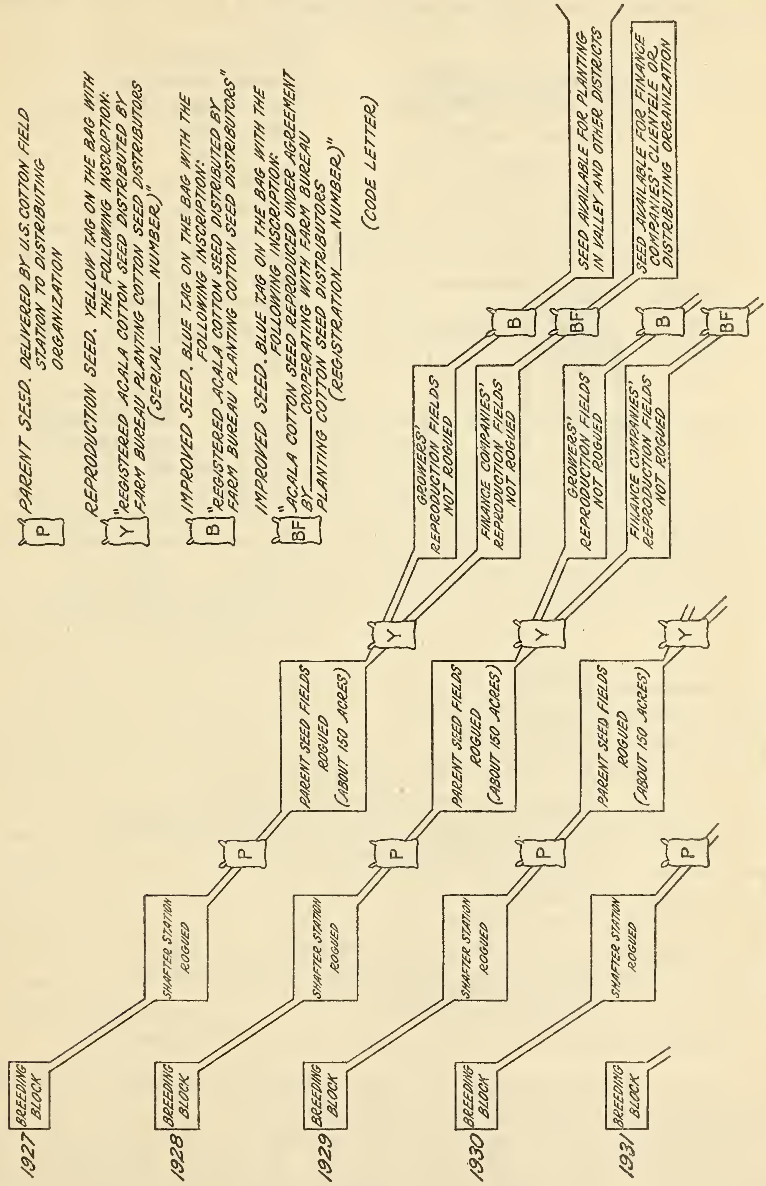
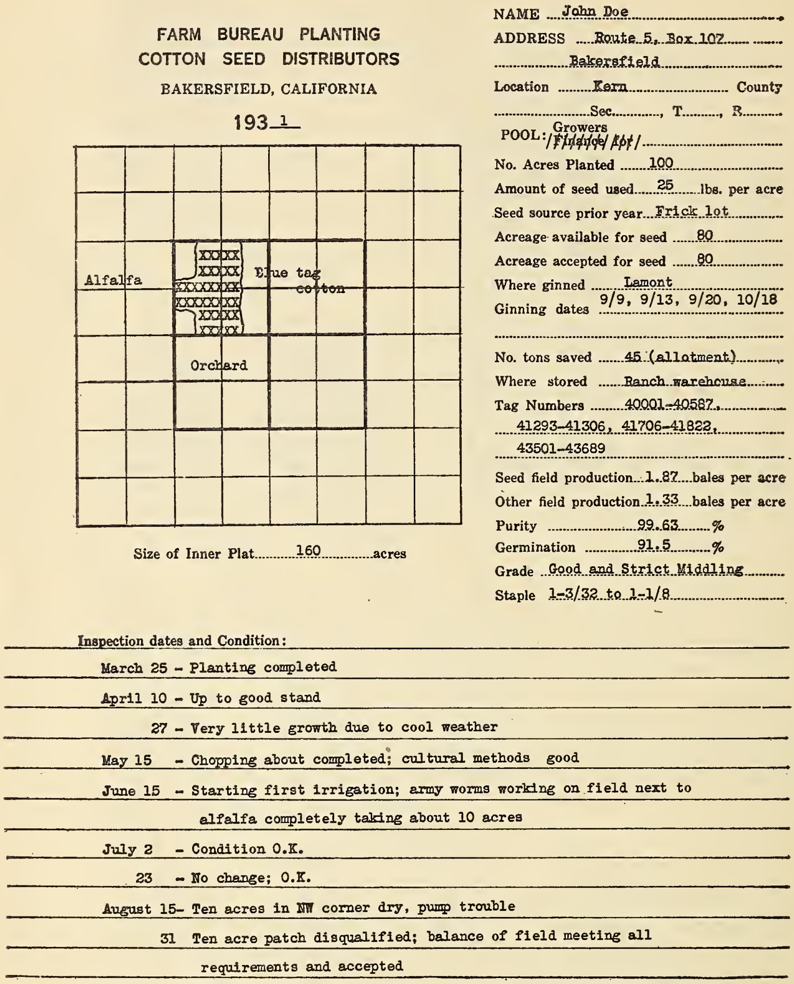

P PARENT SEED. DELIVERED BY U.S. COTTON FIELD STATION TO DISTRIBUTING ORGANIZATION
Y REPRODUCTION SEED. YELLOW TAG ON THE BAG WITH THE FOLLOWING INSCRIPTION: "REGISTERED ACALA COTTON SEED DISTRIBUTED BY FARM BUREAU PLANTING COTTON SEED DISTRIBUTORS (SERIAL ______ NUMBER)"
B IMPROVED SEED. BLUE TAG ON THE BAG WITH THE FOLLOWING INSCRIPTION: "REGISTERED ACALA COTTON SEED DISTRIBUTED BY FARM BUREAU PLANTING COTTON SEED DISTRIBUTORS"
BF IMPROVED SEED. BLUE TAG ON THE BAG WITH THE FOLLOWING INSCRIPTION: "ACALA COTTON SEED REPRODUCED UNDER AGREEMENT BY ______ COOPERATING WITH FARM BUREAU PLANTING COTTON SEED DISTRIBUTORS (REGISTRATION ______ NUMBER)"
(CODE LETTER)
1927
1928
1929
1930
1931
BREEDING BLOCK
SHAFTER STATION ROGUED
P
PARENT SEED FIELDS ROGUED (ABOUT 150 ACRES)
Y
GROWERS' REPRODUCTION FIELDS NOT ROGUED
FINANCE COMPANIES' REPRODUCTION FIELDS NOT ROGUED
B
BF
SEED AVAILABLE FOR PLANTING IN VALLEY AND OTHER DISTRICTS
SEED AVAILABLE FOR FINANCE COMPANIES' CLIENTELE OR DISTRIBUTING ORGANIZATION

FIGURE 1.—Diagram showing method of increasing cottonseed in the San Joaquin Valley of California.

the pure-seed runs on Sundays. During the peak of the season the gins operate on day and night shifts and try to clean the yard of trucks during Saturday night. After the cotton is off the gin yard the crew cleans the machinery and the house of all seed and seed cotton; a trained crew can clean a gin in about 2 hours. The organization provides an inspector (in most cases its manager) to examine the gin before the pure-seed run is started.


Alfalfa
Blue tag cotton
Orchard

FARM BUREAU PLANTING
COTTON SEED DISTRIBUTORS
BAKERSFIELD, CALIFORNIA
193 1

Size of Inner Plat 160 acres

NAME John Doe
ADDRESS Route 5, Box 107
Bakersfield
Location Kern County
Sec. , T. , R.
POOL: ~~Finance lot~~ Growers
No. Acres Planted 100
Amount of seed used 25 lbs. per acre
Seed source prior year Frick lot
Acreage available for seed 80
Acreage accepted for seed 80
Where ginned Lamont
Ginning dates 9/9, 9/13, 9/20, 10/18
No. tons saved 45 (allotment)
Where stored Ranch warehouse
Tag Numbers 40001-40587, 41293-41306, 41706-41822, 43501-43689
Seed field production 1.87 bales per acre
Other field production 1.33 bales per acre
Purity 99.63 %
Germination 91.5 %
Grade Good and Strict Middling
Staple 1-3/32 to 1-1/8

Inspection dates and Condition:
March 25 - Planting completed
April 10 - Up to good stand
27 - Very little growth due to cool weather
May 15 - Chopping about completed; cultural methods good
June 15 - Starting first irrigation; army worms working on field next to alfalfa completely taking about 10 acres
July 2 - Condition O.K.
23 - No change; O.K.
August 15- Ten acres in NW corner dry, pump trouble
31 Ten acre patch disqualified; balance of field meeting all requirements and accepted

FIGURE 2.—Record sheet including an inspection report on a 100-acre seed field.

Special pure-seed augers have been installed in a few gins, but in a majority of gins the trash auger is used to convey the seed to the bagging chute. The augers have metal housings and are easily cleaned with a sack when the auger turns slowly. During the seed run, the trash from the gin is directed over the auger to the floor. Since the cotton from seed fields is harvested as cleanly as possible the boll breakers and hull extractors are not used and the trash auger is available for seed.

Seed from the parent fields is always ginned immediately after the gin is cleaned; it is followed by seed from the reproduction fields. The seed is sacked as it is ginned and tags are securely fastened to bags. Yellow tags are fastened to seed from parent fields and blue tags to seed from reproduction fields.

HANDLING CHARGE

The bylaws of the organization provide that the expense and the creation of a surplus fund shall be met by a fee, called the handling charge, collected from the grower on each pound of planting seed sold. The amount of the handling charge is determined annually by the board of directors. The directors of the distributing organization meet in December, give final consideration to the probable demand, and fix the handling charge and the selling price of seed for the coming year.

The estimated annual expense of the organization, the amount of seed in the growers' pool, and the probable sales from the finance pool determine the handling charge.

The directors, believing that 1 cent per pound would be a maximum charge for creating a surplus fund, supervising production, and making distribution, have prepared contracts providing that the grower members or the cotton-financing company will not pay more than this amount. Since this item must be included in the selling price, the probable volume of sales and expenses are carefully analyzed to guide the directors in fixing the annual handling charge.

While 1 cent per pound is the maximum handling charge allowable, it has never been necessary to assess this amount. The following charges have prevailed since the seed organization began operating: One half cent per pound in 1926, 1930, and 1931; three-fourths cent per pound in 1927, 1928, and 1929.

Assuming that the surplus fund is ample and sales from growers and finance pools were larger than anticipated, thereby creating more revenue from handling charges than is needed, a reapportionment based on actual operating costs would be made and all pool members reimbursed. This occurred in 1931 when the handling charge was fixed at one-half cent per pound, or $10 per ton, and the organization sold 1,008.3 tons of seed for planting. Since the operating costs were $6,532.44 for the year, the cost per ton of seed handled was $6.48, making it possible to refund to pool members $3 per ton and strengthen the surplus fund by $763.45. (Interest on surplus fund deposited in savings accounts created assets to balance the above.)

The operating expenses of supervising production and making distribution include the following items: Salary and traveling expenses of the manager, premium on bond of manager, stenographic services, office supplies, telephone and telegraph, advertising, audit, express, postage, tags, equipment, drayage, and storage charges.

POOLING DIFFERENTIAL

While the management endeavors to save enough seed in the growers' pool to supply the demand for the coming season, there is no accurate method of forecasting exact requirements. The pool is made adequate to provide a safe margin for unexpected demands. With only one variety and one source of seed available to the cotton planter in the valley the seed organization has a definite obligation in the matter of seed supply.

The selling price is determined by the actual costs that grower members have expended in producing their seed (table 2) and by careful analysis of expected sales and oil-mill price for the unsold tonnage. These calculations establish a range between costs and selling price, called in this circular the pooling differential—it might be called possible profit.

TABLE 2.—*Complete charge per ton against growers' seed used as a basis for establishing selling price, 1926–31* [1]

[Charges include oil-mill prices and allowances for producing, storing, and handling the seed]

Item	1926	1927	1928	1929	1930	1931
Seed at oil mill	$30.00	$22.50	$40.00	$30.00	$30.00	$22.00
Growers' production and storage costs:						
Preparation of seed bed	1.00	1.00				
Field inspection	2.50	2.50				
Weed control				2.00	4.30	
Extra cost of ginning	1.50	3.00	3.00	3.00	1.40	1.50
Sacks and twine	3.80	3.57	3.36	3.37	3.70	2.73
Labor for sacking	1.70	1.50	1.50			
Trucking	2.00	1.75	1.50	1.50	2.00	2.00
Insurance	1.40	1.54	1.54	1.05	1.05	.61
Interest	2.80	2.10	2.10	1.46	1.45	1.00
Storage	4.00	4.00	4.00	[2] 2.00	2.00	2.00
Cleaning gin	1.00					
Shrinkage	9.20	6.54	2.00	1.00	2.20	1.00
Total production and storage costs	30.90	27.50	19.00	15.38	18.10	10.84
Handling charge to cover cost of selling by organization	10.00	15.00	15.00	15.00	10.00	[3] 10.00
Total cost	70.90	65.00	74.00	60.38	58.10	42.84

[1] The years designated represent the selling season; the price of oil-mill seed noted was in effect the fall previous to years indicated.

[2] Beginning in 1929 the organization has paid storage charges above $2 per ton from surplus.

[3] $3 of this charge was passed back to members.

In 1926 a few growers were unable to complete their contracts, so the organization, in the face of a good demand, purchased their seed outright in the fall. As shown in table 3, the indicated amount per ton ($9.37) passed to surplus fund in that year, included $3.57 profit on the sale of seed purchased outright from these growers, plus the difference ($5.80) between the pooling differential ($29.10) and that portion of this differential received by the growers ($23.30). Members of the board of directors endorsed notes for the first year's expenses and for the purchase money for the seed. In 1928 the entire amount ($2.85) passed to surplus fund, represented profit on seed purchased outright from growers. However, the purchase in 1928 was made from the accumulated surplus fund, and individual endorsements by members of the board for creating funds for emergency expenditures were unnecessary. In that year also a $2 per ton freight allowance was made to the purchasers of the seed. This allowance was deducted from the pooling differential, leaving $16 to be distributed to the growers.

TABLE 3.—*Annual selling price, cost of producing and handling, pooling differential, profit received by growers, and amount per ton passed to surplus funds, and total surplus fund, 1926–31*

Year	Annual selling price	Cost of producing and handling	Pooling differential	Amount of pooling differential received by growers	Amount passed to surplus fund	Total surplus fund [1]
1926	$100	$70.90	$29.10	$23.30	$9.37	$3,515.23
1927	80	65.00	15.00	3.84		2,668.63
1928	92	74.00	18.00	[2] 16.00	2.85	3,609.10
1929	85	60.38	24.62	4.62	10.44	9,494.39
1930	80	58.10	21.90	.35	2.24	10,236.24
1931	60	42.84	17.16	15.64	.75	11,000.14

[1] The surplus fund has been created to finance the organization and to maintain supplies of improved planting seed in case of emergency.

[2] A freight allowance of $2 per ton was made on all sales in 1928.

The method of fixing the selling price of seed is explained in the following illustration:

It will be assumed that there are 500 tons of seed in the growers' pool. The milling price plus the cost of production and storage charges, etc., are estimated to be $35 per ton and a handling charge of $10 per ton seems adequate. On this basis, if all the seed in the pool were sold at $45 per ton the grower would receive actual costs. It would be unsound business for the management to expect a complete sell-out, since the pool is made with a margin for unexpected demands arising from seasonal or market conditions. The selling price would be fixed by expecting 350 tons of seed to be sold at $60 per ton for planting purposes and 150 tons to be sold at $25 per ton to the oil mill after the planting season. This sales combination would return $49.50 per ton for all seed in the pool. Should the demand for planting seed be less than 285 tons, there would be a loss to the grower. On the other hand, should an unexpected demand arise, the entire pool may be sold at $60 per ton for planting.

From the above illustration, with $45 per ton representing total costs and charges against the growers' seed, and a selling price of $60 per ton, there is a pooling differential of $15 per ton available to the grower, depending upon the volume of sales. This is a small differential and may not insure the grower against loss on account of overestimated demand.

A record of seed handled in the growers' and finance pools from 1926 to 1931, inclusive, is shown in table 4.

TABLE 4.—*Record of seed handled in the growers' and finance pools, 1926–31*

Year	Amount of parent seed planted	Seed saved for growers' pool	Seed sold			Selling price of seed per ton
			For planting	To oil mill	From finance pool	
	Tons	*Tons*	*Tons*	*Tons*	*Tons*	
1925	1.00					
1926	1.00	414.00	375.00	39.0		$100
1927	1.50	317.00	238.40	78.6		80
1928	2.00	330.00	330.00			[1] 92
1929	1.75	564.00	564.00		245.00	85 [2] 80
1930	2.25	590.00	351.00	239.0	165.00	80 [2] 75
1931	2.25	412.25	412.25		596.06	60

[1] In 1928 a freight allowance of $2 per ton was made on all sales. In subsequent years the freight has been prepaid to main-line stations of the Atchison, Topeka & Santa Fe and Southern Pacific Railroads in the San Joaquin Valley on all lots of 25 tons or more.

[2] A reduction of $5 was made on lots of 100 tons or more to 1 purchaser.

RESERVE SEED SUPPLY

Growing conditions in the San Joaquin Valley vary so little from season to season that the annual production of cottonseed per acre is rather constant. Reserve supplies of planting seed are not carried from year to year by the distributing organization. Where rainfall must be depended on and where major insect pests must be reckoned with, the annual production is more uncertain, and reserve seed supplies would be essential in a permanent program.

FIELD AND GIN RECORDS

A complete record of the acreage of the seed fields accepted by the organization is kept. The name of grower, acreage, district where grown, parentage or source of the seed planted, place and date of ginning, name of gin inspector, color of tag placed on the bags, serial number of the tag used, germination and purity tests, and percentage and kind of noxious weed seed present in the sample are summarized by the organization and a copy is filed annually with the United States Cotton Field Station. A typical sheet of this record, or registry as it is called, is shown as table 5.

TABLE 5.—*Typical sheet of seed register showing data to be recorded*

Number of acres accepted	Name and address of reproducing agent	District	Parentage of seed	Ginning dates	Inspector	Color of tag
85	J. F. Doe, 308 Bower Building, Bakersfield.	Arvin, Weed Patch.	Yellow	Sept. 19	Pomeroy	Blue.
			do	Sept. 25	do	Do.
			Parent	Oct. 8	do	Yellow.
			Yellow	Oct. 21	do	Blue.
50	E. S. Doe, Arvin	do	do	Sept. 28	do	Do.
			do	Oct. 26	do	Do.
			do	Nov. 2	do	Do.
60	J. C. Doe, Route 4, Box 175, Bakersfield.	Weed Patch	do	Sept. 28	do	Do.
			do	Oct. 26	do	Do.
			do	Nov. 2	do	Do.
			do	do	do	Do.
25	Forest Doe, Route 5, Box 108, Bakersfield.	do	Parent	Sept. 28	do	Yellow.
			Yellow	do	do	Blue.
			Parent	Oct. 5	do	Yellow.
			do	Oct. 12	do	Do.
			do	Nov. 16	do	Do.

Number of acres accepted	Name and address of reproducing agent	Tag serial numbers	Ginned at—	Germination	Purity	Remarks
				Percent	*Percent*	
85	J. F. Doe, 308 Bower Building, Bakersfield.	30001–30195	Producers, Arvin.	92.0	99.65	
		30196–30331				
		5501– 5694		90.0	99.79	
		30508–30535				
50	E. S. Doe, Arvin	33001–33189	Pacific Weed Patch.	94.0	99.33	
		33271–33338		94.5	99.34	
		33407–33477		98.0	99.00	
60	J. C. Doe, Route 4, Box 175, Bakersfield.	33190–33270	do	97.0	99.41	Barnyard grass.
		33339–33406		96.0	99.00	
		33478–33500		88.0	99.00	
		34801–34864				
25	Forest Doe, Route 5, Box 108, Bakersfield.	5701– 5784	San Joaquin, Lamont.			
		33559–33593				
		5901– 6060		93.0	99.64	
		6061– 6177		85.0	99.52	
		6986– 7000		86.0	99.00	

The serially numbered tags attached to each lot of seed identify it with its producer, so that proper adjustments can be made in case of complaint from the purchaser. Adequate samples are taken from each grower's seed to give an accurate cross section of the lot, and tests of viability are made in the seed laboratory of the State Department of Agriculture.

Very little rain falls in the valley during the harvest season, so the cotton usually is harvested dry, and adequate stocks of seed can be stored in excellent condition.

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